REMARKS

Claims 5-20 are currently being considered.

Drawings

The office action indicates that corrected drawings are required.

Applicants have submitted herein are corrected drawing sheets labeled FIGS. 13-16 as required by the office action. No new matter has been added.

In view of the above submitted corrected drawing sheets, applicants submit that the requirement has been satisfied.

Specification

The specification has been objected to for containing informalities.

Applicants have submitted a marked-up substitute specification and a clean-copy substitute specification for correcting the informalities contained therein. No new matter has been added.

In view of the above substitute specification, applicants request withdrawal of this objection.

Claim Objections

Claims 8 to 18 and 20 have been objected to for containing informalities.

Claims 8-18 and 20 have been cosmetically amended to correct the informalities.

In particular, applicants have amended claim 8 to clarify the subject matter. The phrase "and the high impurity concentration being low at a region near surface of the substrate" has been deleted. No new matter has been added. Support for claim amended claim 8 can be found, for example, in FIG. 6 and on page 16, line 3 to page 17, line 8 of the present application.

In view of the above amendments and remarks, applicants request withdrawal of the objections.

Claim Rejections 35 USC 112

Claims 6 to 20 have been rejected for lack written description.

Claim 6 has been rejected for lacking a written description. However, applicants respectfully submit that the specification provides support for claim 6. In particular, support for claim 6 can be found, for example, in FIG. 2 and on page 13, line 3 to page 14, line 19 of the present application.

Claim 7 has been rejected for lacking a written description. However, applicants respectfully submit that the specification provides support for claim 7. In particular, support for claim 7 can be found, for example, in FIG. 6 and on page 16, line 3 to page 17, line 8 of the present application. In addition, applicants note that although layer 11 is shown to span beyond the drain region 10, it is acceptable to claim that the layer 11 spans to the drain region. FIG. 6 shows that layer 11 spans from one **end** of gate insulation film 4, in contrast to FIG. 7 which shows that layer 11 spans from a predetermined distance (L) from one end of film 4.

Claim 8 has been rejected for lacking a written description. Applicants have amended claim 8 to clarify the subject matter. No new matter has been added. Support for claim amended claim 8 can be found, for example, in FIG. 6 and on page 16, line 3 to page 17, line 8 of the present application. In addition, applicants note that although layer 11 is shown to span beyond the drain region, it is acceptable to claim that the layer 11 spans to the drain region 10. FIG. 6 shows that layer 11 spans from one end of gate insulation film 4, in contrast to FIG. 7 which shows that layer 11 spans from a predetermined distance (L) from one end of film 4.

In view of the above remarks, applicants request withdrawal of the rejections.

Claim Rejections 35 USC 102

Claims 5 to 7 and 19 have been rejected as being anticipated by Kwon et al.

Applicants submit that the cited claims are not anticipated for the following reasons.

Claim 5 recites:

> 5. (Previoulsy Amended) A method of manufacturing a semiconductor device comprising:
>
> implanting an impurity of a first conductive type in a semiconductor substrate of a second conductive type;
>
> providing a first gate insulation film on the semiconductor substrate;
>
> **diffusing the implanted impurity in the substrate to form a first drain region partly under the first gate insulation film and a second drain region adjacent to and above the first drain region, said first drain region having a different impurity concentration than the second drain region;**

providing a second gate insulation film on the semiconductor substrate except where the first gate insulation film is disposed;

providing a gate electrode that spans from the first gate insulation film to the second gate insulation film;

providing a source region of the first conductive type disposed proximally to one end of said gate electrode; and

providing a third drain region of the first conductive type disposed distally from the other end of said gate electrode and disposed in said second drain region. (Emphasis added.)

The present invention as claimed in claim 5 is not anticipated at least for the bolded features indicated above. It is contended in the office action that Kwon's drift region 24 is a drain region because the drift region allegedly performs the same function as a drain region. However, this is incorrect. The drift region 24 is explicitly taught in Kwon (see, for example, column 3, lines 1-12). Kwon also teaches that there is a separate drain region 36, apart from the drift region 24 (column 3, lines 38-42). The drain and drift regions are not merely a matter of semantics or nomenclature. Robert Metzger states in his June 2002 article, "LDMOS Turns Up the Power," in *Compound Semiconductor* (see attached Exhibit I):

The high operating voltages required for power-amplifier applications are achieved through **optimized design of the drift region between the gate and the drain** of the LDMOS transistor. To achieve high breakdown characteristics, the typical LDMOS design relies on a drift region formed by an n-type diffusion well placed in a p-type substrate. Additional control of the behavior of the drift region is obtained by the placement of a buried p-layer (labeled p-top) and a surface n-layer (labeled n-top) at the surface of the drift region, which can be used to generate a reduced surface field (RESURF) structure. (Emphasis added.)

The drain and the drift regions are different and distinct regions configured to perform different functions. To paraphrase Metzger, the design of the drift region apart from the drain region is crucial in achieving a particular breakdown voltage characteristic in LDMOS. Kwon's gate/drift/drain structure was used to achieve a particular breakdown voltage characteristic. (See, for example, column 4, lines 4-39) It is clear that the function of a drift region is different than the function of a drain region. In addition, the present invention makes no mention of a drift region. Arbitrary stating that Kwon's drift region 24 is a drain region and thereby contradicting Kwon's own teaching that the drift region 24 is separate from a drain region is grounded on no other reason than to reject the present invention by using impermissible hindsight to read the

present invention into the prior art. There is no disclosure, teaching, or suggestion that Kwon's drift region 24 is a drain region.

It is also contended in the office action that the first and second drain regions are inherently formed in the Kwon patent by performing an implant 23 and then diffusing the implant to arrive at region 24, which is asserted to be a drain region. As explained above, region 24 is not a drain region, rather region 24 is explicitly disclosed as a drift region having a separate structure and performing a different function as understood by one skilled in the art. In the present invention, the first and second drain regions of different impurity concentrations are formed by diffusing the previously implanted impurity. In contrast, Kwon does not show drain regions with different impurity concentrations. Kwon shows a single drain region 36. Kwon's region 24, which is alleged to be a drain region in the office action, is a drift region.

Further, even if assuming *arguendo* that the drift region 24 and the drain region 36 correspond to the first and second drain regions of the present invention, respectively, Kwon et al. still does not disclose "diffusing the implanted impurity in the substrate to form a first drain region partly under the first gate insulation film and a second drain region adjacent to and above the first drain region, said first drain region having a different impurity concentration than the second drain region." This is because Kwon's regions 24 and 36 are separately produced by different implantations (see Figs. 1 to 4). That is, the drift region 24 is first formed as shown in Fig. 2 and the drain region 36 is later formed in a separate implantation as shown in Fig, 4. In the present invention, the different drain regions are produced by a single implantation followed by diffusion of implanted impurities. Thus, the present invention of claim 5 is not anticipated at least for the reasons above.

Further, the present invention of claim 5 provides three different drain regions. Kwon discloses only one drain region 36. Thus, at least for this reason, claim 5 is not anticipated by Kwon et al.

For the foregoing reasons, the preset invention of claim 5 is not anticipated by the cited prior art. Moreover, claims 6 to 20, which depend on claim 5 directly or indirectly, are not anticipated at least for the same reason as claim 5.

Summary

For the foregoing reasons, Applicants respectfully request that all of the pending claims be allowed.